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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/581,804	06/16/2000	KEON-HOON YOO	A33291PCTU	4337
21003	7590	11/19/2003	EXAMINER	
BAKER & BOTTS 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			LEE, RIP A	
			ART UNIT	PAPER NUMBER

1713

DATE MAILED: 11/19/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/581,804

Applicant(s)

YOO ET AL.

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 5-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other: _____

DETAILED ACTION

This office action follows a response filed on September 8, 2003. Applicants have amended claims 1 and 8.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,767,833 to Yumoto *et al.* in view of JP 56-41216 for the same reasons set forth in the previous office action.

Briefly, one learns from Yumoto *et al.* that polybutadiene and styrene-butadiene may be used interchangeably to afford transparent thermoplastic resins. Therefore, the skilled artisan would have found it obvious to use polybutadiene in the composition of Yumoto *et al.*, and one with skill in the art would have expected such a modification to work.

Present claim 1 was amended to recite means by which the large aperture polybutadiene latex is prepared. Where product-by-process claims are rejected over a prior art product that appears to be the same, the burden is shifted to the Applicant to establish an unobviousness difference, even if the production processes are different. *In re Marosi*, 218 USPQ 298 (Fed. Cir. 1983). One also notes that the patentability of a product claim rests on the product formed, not on the method by which it was produced. *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

Both references are silent with respect to the swelling index of the latex. However, in view of the fact that (i) the value of gel content lies within that presently claimed, (ii) gel content and swelling index are related to each other, and (iii) the same amount of molecular weight control reagent is used in the manufacture of latex, reasonable basis exists to believe that the prior art latex possesses the same properties. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

4. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yumoto *et al.* in view of JP 56-41216 as applied to claims 1, 2, and 5-7 above, and further in view of U.S. Patent No. 5,200,441 to Kim *et al.*

Neither Yumoto *et al.* nor JP 56-41216 disclose the claimed process for preparing large aperture polybutadiene latex. As is known in the art, polydiene latices of larger particle size may be prepared by conventional emulsion polymerization, or by agglomeration by acidulation, as explained in Kim *et al.* Therefore, it would have been obvious to one having ordinary skill in the

art to use the method taught in Kim *et al.* as a means of achieving large particle size latex. Since the method is fully taught in the patent, the skilled artisan would have expected the process to work successfully.

Present claim 12 requires the total refraction coefficient of the compound, excluding the polybutadiene latex, to be 1.510-1.526. In view of the fact that the refraction coefficient of methyl methacrylate, styrene, and acrylonitrile are 1.49, 1.59, and 1.518, respectively, and in view of the fact that the amounts of components decreases in the order, methyl methacrylate, styrene, and acrylonitrile, it is highly likely that the refraction coefficient lies within the claimed range. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). The PTO can not perform experiments, therefore, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Response to Arguments

5. Applicants traverse the rejection of claims 1, 2, and 5-7 under 35 U.S.C. 103(a) as being unpatentable over Yumoto *et al.* in view of JP 56-41216. Applicant's arguments have been considered fully, but they are not persuasive.

Applicants maintain that use of polybutadiene latex in lieu of styrene-butadiene latex is not obvious to the skilled artisan because he would discover from the information provided in the response that the high viscosity of polybutadiene results in agglomeration during graft polymerization. As such, the resulting material would not be amenable to transparent resins. The Applicants note that the present invention solves this difficulty by increasing the gel content of polybutadiene, thereby reducing tendency for agglomeration. Applicants stress that large aperture polybutadiene having a gel content of 70-95 % and particle diameter of 2600-5000 Å can not be manufactured by methods other than those described in the present invention.

It is maintained that the skilled artisan, having read the two references, would have found it obvious to use polybutadiene latex in lieu of styrene-butadiene latex in order to arrive at the subject of the present claims. First, the skilled artisan recognizes that transparency is mostly imparted by the major component, methyl methacrylate. One learns from Yumoto *et al.* that SB-latex imparts impact resistance to the base resin. One also learns from the secondary reference that polybutadiene latex may also be used to enhance impact resistance to methyl methacrylate. The notion to use polybutadiene in lieu of styrene-butadiene flows naturally and obviously from the combined teachings.

The skilled artisan, conversant in the emulsion polymerization methodology also realizes that Applicants' statement is not entirely correct. Polybutadiene latex having an unexceptional particle size of 2600-5000 Å and gel content of 70-95 % may be prepared by conventional methods which are well documented.[†]

Applicants also submit that Yumoto *et al.* teaches away from the instant invention, stating that thermoplastic resins compositions superior in transparency and chemical resistance are difficult to obtain when the gel content lies outside the scope of the invention. While one does not disagree with these inventors' conclusions, the notion that the prior art teaches away from the instant invention is perplexing because Applicant's gel contents lie squarely within the gel content ranges disclosed in Yumoto *et al.*

Finally, it is noted that Applicants have not burden in establishing an unobviousness difference with respect to swelling indices. In view of the discussion above, the rejection of record has not been withdrawn.

[†]U.S. Patent No. 5,225,494 to Ishiga

U.S. Patent No. 5,071,946 to Schmidt *et al.*

U.S. Patent No. 3,880,786 to Feast *et al.*

U.S. Patent No. 3,855,355 to Moore

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure. The following references show the state of the art with respect to graft polymerization of polybutadiene latices.

U.S. Patent No. 6,080,815 to Lee *et al.*

U.S. Patent No. 4,703,090 to Ferraresi *et al.*

U.S. Patent No. 4,581,408 to Trabert *et al.*

U.S. Patent No. 4,520,165 to Zabrocki *et al.*

WO 00/26298 to Yoo *et al.*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

ral

November 14, 2003



DAVID W. WU
SUPERVISORY PATENT EXAMINER
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